

electronic engineer

Name: _____



Requirements	Passed
1. Explain basic Electron Theory. Explain the difference between conventional current and electron flow.	
2. Define what is meant by "Current" and "Voltage" in an electronic circuit. State and explain Kirchhoff's Laws of Current and Voltage. Explain what "Ground" is.	
3. Describe the basic functions of the following electronic components: a) Resistor b) Capacitor c) Inductor d) Diode e) Transistor f) Describe some of the different types of each of the above components.	
4. Explain Ohm's Law by solving a simple problem of Current, Voltage and Resistance.	
5. Demonstrate your familiarity with passive component colour and number codes by correctly identifying the values of a resistor, capacitor, and inductor.	
6. Describe the function of an Operational Amplifier. Draw the circuit diagram of an Op-Amp being used for one of the following applications: a) Light Sensing b) Temperature Sensing c) Inverting or Non-Inverting Amplifier d) Voltage Summing, Integration or Differentiation e) Build the chosen Op-Amp circuit and demonstrate its function.	
7. Explain the differences between Digital and Analogue Electronics. Describe the function of both an ADC and a DAC	
8. Describe how a Printed Circuit Board is made.	
9. Design a simple analogue electronic circuit and demonstrate its function. Do the following: a) With the examiner, agree on and specify what function the circuit must perform. b) Draw a schematic describing the circuit. c) Make a Veroboard or PCB and solder the circuit components onto it. d) Measure or illustrate that the circuit functions as intended. OR Design a simple digital embedded system. Do the following: a) Select suitable Microcontroller and use it to control your system. b) Draw a schematic describing the circuit. c) Make a Veroboard or PCB and solder the circuit components onto it. d) Write a program for the microcontroller, flash the program onto the device and demonstrate that the system functions correctly. OR Demonstrate your ability to locate and repair a fault in a simple electronic circuit. Do the following: a) Identify the components on the PCB and either reverse engineer the circuit schematic or find the circuit board's schematic. b) Identify the fault and locate its source. c) Explain how the fault may have occurred. d) Either repair the circuit or explain why the circuit cannot be repaired.	

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Badge Awarded

